

## **Interim Compatibility Determination**

**Use:**                **Research, Exploration, Scientific Collections, and Surveys**

**Refuge Name:** **Mariana Trench National Wildlife Refuge and  
Mariana Arc of Fire National Wildlife Refuge within the  
Marianas Trench Marine National Monument**

### **Establishing and Acquisition Authority(ies):**

The Marianas Trench Marine National Monument (Monument) was established by Presidential Proclamation 8335 on January 6, 2009. Implementing the direction from the Proclamation, the Interior Secretary on January 16, 2009 delegated management of the Monument to the U.S. Fish and Wildlife Service (FWS) by Secretarial Order 3284. The Secretary also directed that the "Trench Unit" and the "Volcanic Unit" of the Monument to be managed as units of the National Wildlife Refuge System (later titled the Mariana Trench National Wildlife Refuge and Mariana Arc of Fire National Wildlife Refuge, respectively; and hereafter collectively called "Monument/Refuge unit(s)"). The Secretarial Order establishing these areas as units of the Refuge System is authorized under the Fish and Wildlife Act of 1956; the National Wildlife Refuge System Administration Act of 1966, as amended; Section 2 of the Reorganization Plan No. 3 of 1950; and the Refuge Recreation Act of 1962.

The Monument and its two Refuge units are managed through the Pacific Reefs National Wildlife Refuge Complex, headquartered in Honolulu, Hawai'i.

### **Refuges Purposes\*:**

"... for the development, advancement, management, conservation, and protection of fish and wildlife resources ... 16 U.S.C. § 742f(a)(4) "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956).

"... conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats ... for the benefit of present and future generations of Americans..." 16 U.S.C. § 668dd(a)(2) (National Wildlife Refuge System Administration Act)

"... suitable for— (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. § 460k-1  
"... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. § 460k-2 (Refuge Recreation Act (16 U.S.C. § 460k-460k-4), as amended).

\* applicable for both refuge units, as taken from the Refuge Purposes Database at:  
[http://www.fws.gov/refuges/policiesandbudget/purposes/Purposes\\_Search.cfm](http://www.fws.gov/refuges/policiesandbudget/purposes/Purposes_Search.cfm)

### **Other Management Direction:**

#### *Presidential Proclamation 8335*

"...for the purpose of protecting the objects identified above..." "... [Interior Secretary] shall not allow or permit any appropriation, injury, destruction, or removal of any feature of this monument except as provided for by this proclamation or as otherwise provided for by law"

“...Regulation of Scientific Exploration and Research...Subject to such terms and conditions as the Secretary deems necessary for the care and management of the objects of this monument, the Secretary of the Interior may permit scientific exploration and research within the monument, including incidental appropriation, injury, destruction, or removal of features of this monument for scientific study...”

*Secretarial Order 3284*

“...For each of the areas subject to this delegation, the Director of the [FWS] shall provide for the proper care and management of the monument, including all objects of scientific and historic interest therein; the conservation of fish and wildlife; and the development of programs to assess and promote national and international monument-related scientific exploration and research.” (Section 4.a.(2) . . . subject to the provisions of the proclamation [8335] establishing this Monument. . .”(Section 4,d)

*National Wildlife Refuge System Mission:*

The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

**Description of Use:**

When determined compatible on a refuge-specific basis research, scientific collecting, and surveys (research) are allowable uses and are conducted on refuges by independent researchers, partnering agencies, and educational groups. Scientific exploration, as a directive of the Monument’s Presidential Proclamation 8335 and Secretarial Order 3284, are further allowable uses for these Monument/Refuge units. The FWS defines the research uses as:

- Research: Planned, organized, and systematic investigation of a scientific nature.
- Scientific collecting: Gathering of refuge natural resources or cultural artifacts for scientific purposes.
- Surveys: Scientific inventory and monitoring.

The research and exploration scientific use may be conducted from manned submersibles, remotely operated unmanned vehicles, landers, or using equipment connected to long hydrographic cables. Equipment, and any platform it is on, may have lighting adequate for navigation and illuminating subjects and provisions for luring marine organisms using bait.

The purposes of research and exploration are to further the understanding of the Earth, its natural resources and processes and to improve the management of such resources. Because of the extreme environments of the Monument/Refuge units and their relative inaccessibility, very little is known about these areas. Much of the science is, therefore, essentially innovative exploration. The types of research and exploration will vary greatly but are predicted to mainly revolve around fundamental exploration and characterization; discovering, characterizing, and understanding bottom-dwelling eukaryotes, bacteria, and archaea; discovering, characterizing, and understanding geologic features and habitats; as well as characterizing and understanding geologic, biologic, oceanographic, physical, and chemical processes.

Research and exploration proposals may be for any time of the year and may be requested for any bottom area of the Monument/Refuge units. The FWS in consultation with the National Oceanic and Atmospheric Administration (NOAA) and others, as applicable, will evaluate each proposal and may put limits on the activities to ensure that negative impacts to resources are avoided or limited.

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Research, Exploration, Scientific Collections, and Surveys*

Each research or exploration project would likely have different protocols and methods; therefore, each study necessitates its own scientific review. Each project would be carefully reviewed to prevent any significant short-term, long-term, or cumulative impacts. New research or exploration requests would be evaluated by FWS staff, applicable scientific partners at NOAA and U.S. Geologic Survey, as well as other subject-matter experts as determined necessary by the FWS. Evaluations and reviews would be conducted to determine if the species studied, methods used, or habitat type and locations affected may lead to undesirable cumulative impacts. All projects would be required to have a Monument/Refuge unit Special Use Permit (SUP). Applicants would also be required to obtain any other relevant permits. This degree of review would help ensure numerous levels and types of impacts are carefully considered before any permit for research or exploration is issued. Within the SUP, conditions would be clearly defined so as to protect and conserve the existing resources found within the Monument/Refuge. Some of the standard and specific conditions are included in this Interim Compatibility Determination (CD) under Stipulations Necessary to Ensure Compatibility.

Collections of scientific specimens would be closely monitored and tracked as donations or loans to the permittee. Requirements for entering biological data or metadata into a national open-access database may be specified on SUPs. Donations or loans of collections would be managed in accordance with Title 50 of the Code of Federal Regulations, sections 12.35 – 12.38, FWS Manual 701 FW 5, and Director's Order No. 109, as amended. Permittees may use specimens collected under a permit, any components of any specimens (including natural organisms, enzymes, genetic materials or seeds), and research results derived from collected specimens for scientific or educational purposes only, and not for commercial purposes unless they have entered into a Cooperative Research and Development Agreement (CRADA) with the FWS. FWS prohibits the sale of collected research specimens and other transfers to third parties must have FWS authorization prior to any transfer. Permittees may be also required to transfer specimens to a museum or other curator, as identified by the FWS.

Collection of visual (film, video) and audio data for scientific purposes are likely to coincide with other SUP applications for commercial/economic or non-commercial filming or audio collection; however, these Recording activities are considered in a separate CD. This Scientific CD only covers the acquisition of scientific data and does not consider or include any commercial/economic or noncommercial recording. We clearly make the distinction here. Scientific data collection cannot be distributed for commercial/economic uses

This use has been primarily proposed because the collecting and analyzing scientific data is extremely valuable to the FWS for its ongoing management of the Monument/Refuge units, and helps to fulfill direction given in Presidential Proclamation 8335. The gathered information would also be used by other scientists, managers, decision-makers, and teachers around the world. The published manuscripts from this research help to disseminate the FWS mission and the significance of the Monument and its resources to other researchers and the public.

Per Presidential Proclamation 8335, nothing in this CD shall restrict scientific exploration or research activities by or for the Secretary of Commerce, and nothing shall be construed to require a permit or authorization for the Secretary of Commerce or his respective scientific activities. In addition, activities and exercises of the Armed Forces (including those carried out by the United States Coast Guard) as identified by Presidential Proclamation 8335, are not required to undergo compatibility review and are exempted from the requirements of this CD.

This Interim CD is prepared as a bridge to allow research and exploration uses until a final CD can be prepared along with the Trench Monument Management Plan.

**Availability of Resources:**

Due to the complex nature of the research and exploration at the extreme depths and environments of the Monument/Refuge units, only a handful of entities have the technology and capability to access the benthic environments. Because this unique protected area is relatively new, it is difficult to accurately anticipate the level of a proposed scientific investigation. We base our prediction of SUP applications on the number of researchers who have contacted FWS for SUP since the establishment of the Monument/Refuge units, as well as our current capability to administer SUPs. During the period of this Interim CD, we predict three science SUPs would be issued in a calendar year. However, public comment of this draft CD raised concerns that three SUPs may be impractical and unnecessarily limiting. For example, one research cruise may support multiple scientific investigations, or one ship may be contracted to support multiple research cruises; thereby totaling more than the three SUPs per year considered here. In such case, efficiencies in the FWS review of SUPs may be realized due to the singular platform from which they operate, and more than three SUPs could conceivably be administered without substantially increasing the administrative burden. We will assess the potential to find efficiency in permitting on a case-by-case basis. If interest in SUPs exceeds what is predicted here, we will reevaluate compatibility before the next year of permitting. At this level, we have sufficient resources to administer the use. We will manage this use at the projected level with current capabilities of Pacific Reefs National Wildlife Refuge Complex. We do so because the research and exploration of these units cannot currently be accomplished by the FWS, so little is known about these areas, and all science investigations will expand knowledge of these deep sites – also benefitting management of them. The bulk of the cost for research SUPs is incurred in staff time to review scientific and logistical proposals, coordinate with researchers, write SUPs, oversee on-going research projects, and review the research results. Law enforcement and dissemination of information about research and surveys in the monument are not included in these cost estimates. We project that administering a research project SUP may require 4 weeks of intermittent staff time.

The protected area of these Monument/Refuge units is at the bottom (the submerged lands and benthic resources) of the Mariana Trench and submarine volcanoes and does not include the overlying water column. Access to it is through unmanned, remotely operated vehicles, tethered equipment, or manned submersibles. There are no FWS facilities in this extreme environment. Permittees would pay the cost of all their actions related to the Monument/Refuge units. Researchers working in the Monument/Refuge units would have to be self-sufficient for safely accessing the Monument/Refuge units and would be required to obtain any additional permits for the actions. Any accidents or responses involving the Permittees will be their sole financial responsibility. Any funds expended by the FWS, or other authorized governmental entities, as a result of an accident or response will be reimbursed by the Permittee.

Category and Itemization	Annual (\$/yr)
Administration and Management	\$4,100
Monitoring & Adaptive Management	\$4,000
<b>Total</b>	<b>\$8,100</b>
<b>Total Offsetting Revenues</b>	<b>-0-</b>

The numbers above reflect the current estimated costs for three permits per year. Estimated costs were calculated using 5 % of the base cost of a GS12/5 refuge biologist, 2% cost of a GS13/5 Deputy Refuge Project Leader, and 5% of a GS7/5 biological technician assuming this use would use that "portion of a year" to administer.

**Anticipated Impacts of the Use:**

Most of the possible impacts recognized are over or within the water column, and therefore outside the boundary of both Monument/Refuge units (covering only the bottom). These impacts may include: (1)

disturbance of foraging sea birds and pelagic fish; (2) disturbance of marine mammals; (3) disturbance of endangered and threatened sea turtles; (4) release of pollution and contaminants; (5) disturbance and damage to fish, invertebrates, and algae.

Possible impacts to the Monument/Refuges' bottom community may include (1) disturbance to benthic marine organisms; (2) introduction of metals and other materials or equipment that are needed to travel to the bottom, and then discarded into the Monument/Refuge unit in order to return to the surface; and (3) accidental introduction of non-native extremophile species from equipment used during the operations.

The bottom features of the trench are likened to inverted islands of biodiversity and each submarine volcano is likewise a submerged island. Each may hold unique biological communities from feature to feature and could potentially be susceptible to invasions by organisms that are not native to that feature. However, accidental introduction of non-native extremophile species or cross contamination of species between deep sites is highly unlikely due to the extremely variable pressure, temperature, and light conditions that exist between the bottom and at surface level. Microbes that may attach to equipment at the bottom lose viability very quickly at surface level, and because equipment would likely remain on the surface for hours before being redeployed, deepwater microbes are not anticipated to survive. Likewise, bait (ie. fish, squid) that may be used to attract benthic species to scientific equipment are not anticipated to pose harm because microbes from surface waters regularly "rain down" to the deep sea. Viruses are also highly unlikely to persist on equipment or in bait due to pressure differences. As added precaution, however, SUPs would require external hard surfaces of bottom equipment be disinfected (i.e., with freshwater or diluted bleach solution) before deploying to other locations.

All research would be designed and managed in a fashion using best management practices to eliminate or minimize these impacts. However, even with proper management and execution of a well-planned project, so little is known about the Trench and Volcanic units, certain responses may occur that could not be predicted or are not easily recognized.

Although a single research or exploration project within a single year may cause few, if any, negative resource impacts, it may in fact cause cumulative impacts over multiple years or when considered additively with all research and exploration projects to occur within the Monument/Refuge units. Therefore, it is critical for refuge managers to examine all projects with a multi-year timeframe in mind and consider all research that is planned concurrently in the Monument before approval is granted. It may be appropriate to set a limit to the number of research or exploration projects occurring in a particular habitat or relative to a single species or species group.

**Public Review and Comment:**

A notice to the public soliciting comments on the draft CD was posted on the Monument and Refuges' websites and available at the Complex office between January 11 to 26, 2012. Known interested constituents, members of the Mariana Monument Advisory Council, and other partners were directly notified of the notice and draft CD availability. Four comments were received over the 15 day comment period and changes are reflected in the final CD as a result of public comments.

**Determination (check one below):**

☐ Use is Not Compatible  
☒ Use is Compatible With Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

Researchers would be required to obtain a FWS SUP. These permits may stipulate more detailed access restrictions and regulations to protect wildlife or Monument/Refuge integrity from anticipated site-specific negative effects caused by the research project. At the discretion of the Refuge Project Leader, FWS-approved staff may be assigned to accompany researchers. Per Presidential Proclamation 8335, nothing in this CD shall restrict scientific exploration or research activities by or for the Secretary of Commerce, and nothing shall be construed to require a permit or authorization for the Secretary of Commerce or his respective scientific activities. In addition, activities and exercises of the Armed Forces (including those carried out by the United States Coast Guard) as identified by Presidential Proclamation 8335, are not required to undergo compatibility review and are exempted from the requirements of this CD.

**GENERAL TERMS AND CONDITIONS:**

A more comprehensive list of Refuge conditions and restrictions is included in 50 CFR Part 27. Not all of these conditions and restrictions would apply to every exploration or research project, or scientific collection or survey. The type of use and where the activity occurs would determine the appropriate conditions.

It is the policy of the FWS to encourage and support research, inventory and monitoring studies in units of the Refuge System in order to provide scientific data upon which decisions regarding management may be based. The FWS will also permit the use of a refuge for other investigatory scientific purposes when such use is compatible with the objectives for which the refuge is managed. Priority will be given to studies that contribute to the knowledge base of and management for biodiversity, enhancement, protection, use, preservation, and management of native wildlife populations and their habitat.

**SPECIFIC TERMS AND CONDITIONS: (include but are not limited to)**

All scientific specimens are the property of the United States and collections are required to comply with FWS regulations and policy as donations or loans to the permittee. Donations or loans of collected specimens would be managed in accordance with Title 50 of the Code of Federal Regulations, sections 12.35 – 12.38, FWS Manual 701 FW 5, Director's Order No. 109 (as amended), and any other applicable FWS or Interior Department regulation or guidance. Collections shall not be shared or distributed beyond the permittee without the expressed permission of the FWS. Any loan remains the property of the United States and the FWS may demand its return at any time. The FWS reserves the right to require the permittee to enter specimen data and metadata into a national, open-access database.

All research permit holders would be required to submit an annual report to the Pacific Reefs National Wildlife Refuge Complex Project Leader/Superintendent that summarizes their activities for a given year and a final report when the project is completed. The report would include at a minimum the following: study title, SUP number, fiscal year, progress, important findings, and problems encountered, proposed resolution to problems, disposition of any collected samples, preparer, and date prepared.

All publications and products derived from the SUP will appropriately acknowledge the U.S. Fish and Wildlife Service and those activities conducted under National Wildlife Refuge System Special Use Permit. Appropriate acknowledgement should also be given to the National Oceanic and Atmospheric

Administration when applicable. All reports, publications, or products will reference the Marianas Trench Marine National Monument.

The permittee must provide FWS two copies of any article, publication, or other product created as a result of the information gained or work completed under this permit, including materials generated at any time in the future following expiration of this permit.

If the proposed research methods would materially impact, or cause appropriation, injury, destruction, or removal of any Monument/Refuge resource, the permittee must identify the issues in advance. Highly intrusive or manipulative research is generally not permitted. As much of this work will be experimental due to the extreme environment, any non-anticipated disturbance would immediately be brought to the attention of the Refuge Project Leader or Manager.

Permittees are required to disinfect external hard surfaces of bottom equipment (i.e., with bleach solution of at least 1:32 dilution of commercial bleach in freshwater [1/2 c bleach per gallon] for equipment small enough to be submerged into a 55-gallon barrel without damage, or for larger equipment- thoroughly pressure-washed with freshwater) before deploying to other locations. The bleach solution would be disposed of properly.

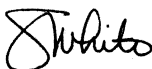
Researchers are responsible for acquiring and/or renewing any necessary additional permits required prior to beginning or continuing their project.

The Project Leader, Refuge Manager or designee can suspend or modify conditions or terminate research or exploration that is already permitted and in progress should unacceptable, unforeseen, or unexpected impacts or issues arise or be noted.

**Justification:**

Research and exploration in the Monument and Refuge units is inherently valuable to the FWS, governmental partners, and global scientific community; and is a key Presidential directive in the protection of this significant area. Research and exploration in the Monument/Refuge units can be especially valuable when it is intended to expand the knowledge base of those who are given the responsibility of managing resources. This is particularly true in this case where many of the resources remain undiscovered, unknown, and presumably in pristine or relatively pristine condition. By facilitating research, exploration, scientific collection, and surveys we are able to learn of the resources within the Monument and the possibilities it holds for expanding scientific understanding of our world. Thus, by effectively administering, tracking, and managing proposed scientific uses through SUPs, the use would not materially interfere with or detract from the fulfillment of Proclamation 8335, the Refuge System mission, or the purposes for which these refuge units were established.

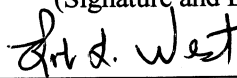
Signature: Refuge Manager \_\_\_\_\_



Digitally signed by Susan White  
DN: cn=Susan White, o=U.S. Fish and  
Wildlife Service, ou=Pacific Reefs  
National Wildlife Refuge Complex,  
email=susan\_white@fws.gov, c=US  
Date: 2012.02.02 15:44:51 -10'00'

(Signature and Date)

Concurrence: Regional Chief \_\_\_\_\_

 2/9/12

(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: \_\_\_10 year\_\_\_ 2/9/22